

**WHAT IS CLAIMED IS:**

1. A method of increasing the vigor and/or the yield of an agronomic plant comprising treating the plant or its propagation material with an effective amount of an active agent which has the capability of increasing the yield and/or vigor of the plant in the absence of pest pressure by fungal plant pathogens, where the active agent is selected from the group consisting of a diazole fungicide, a triazole fungicide, and a strobilurin-type fungicide.

2. A method of increasing the vigor and/or the yield of an agronomic plant comprising treating the plant or its propagation material with an effective amount of a diazole fungicide, a triazole fungicide, or a strobilurin-type fungicide, which has the capability of increasing the yield and/or vigor of the plant in the substantial absence of pest pressure by fungal plant pathogens.

3. A method of increasing the vigor and/or the yield of an agronomic plant comprising treating the plant or its propagation material with an effective amount of a diazole fungicide, a triazole fungicide, or a strobilurin-type fungicide, which has the capability of increasing the yield and/or vigor of the plant in a test wherein germination, sprouting and growth of the plant is carried out under substantially sterile conditions.

4. A method of increasing the vigor and/or the yield of an agronomic plant except for wheat comprising treating an agronomic plant or its propagation material except for wheat with a composition comprising an effective amount of an active agent that has activity against *Gaeumannomyces graminis*, where the active agent is selected from the group consisting of a diazole fungicide, a triazole fungicide, and a strobilurin-type fungicide.

5. A method of improving the vigor and/or the yield of an agronomic plant, the method comprising treating an agronomic plant or its propagation material with an amount of a diazole, triazole or strobilurin-type fungicide that is sufficient to improve the yield and/or the vigor of the agronomic plant, wherein common agricultural practice for the agronomic

plant does not include treatment of the plant or its propagation material with a diazole, triazole or strobilurin-type fungicide.

6. The method according to claim 1, wherein the fungal plant pathogens comprise those against which the fungicide is known to be active.

7. The method according to claim 4, wherein the *Gaeumannomyces graminis* is of the variety *tritici*.

8. The method according to claim 1, wherein the plant or its propagation material is treated with a silthiofam-type fungicide in addition to the diazole, triazole or strobilurin-type fungicide.

9. The method according to claim 1, wherein the fungicide comprises a triazole fungicide having a halogen-substituted phenyl group that is linked to a 1,2,4-triazole group.

10. The method according to claim 1, wherein the fungicide comprises a triazole fungicide selected from the group consisting of amitrol, azaconazole, bitertanol, bromuconazole, climbazole, clotrimazole, cyproconazole, diclobutrazol, difenoconazole, diniconazole, diniconazole-M, epoxiconazole, etaconazole, fenbuconazole, fluquinconazole, flutrimazole, flusilazole, flutriafol, furconazole, furconazole-cis, hexaconazole, imibenconazole, ipconazole, metconazole, myclobutanil, paclobutrazol, penconazole, propiconazole, quinconazole, simeconazole, tebuconazole, tetraconazole, triadimefon, triadimenol, triazbutil, triticonazole, 1-(4-fluorophenyl)-2-(1H-1,2,4-triazole-1-yl)ethanone, and mixtures thereof.

11. The method according to claim 10, wherein the fungicide comprises fluquinconazole, simeconazole, tebuconazole, tetraconazole, triticonazole, 1-(4-fluorophenyl)-2-(1H-1,2,4-triazole-1-yl)ethanone, or mixtures thereof.

12. The method according to claim 11, wherein the fungicide comprises fluquinconazole.

13. The method according to claim 11, wherein the fungicide comprises simeconazole.

14. The method according to claim 11, wherein the fungicide comprises tebuconazole.

15. The method according to claim 11, wherein the fungicide comprises tetraconazole.

5 16. The method according to claim 11, wherein the fungicide comprises triticonazole.

17. The method according to claim 11, wherein the fungicide comprises 1-(4-fluorophenyl)-2-(1H-1,2,4-triazole-1-yl)ethanone.

10 18. The method according to claim 1, wherein the fungicide comprises a diazole selected from the group consisting of imazalil, oxpoconazole, pefurazoate, prochloraz, trifulmizole, and mixtures thereof.

15 19. The method according to claim 1, wherein the fungicide comprises a strobilurin type fungicide selected from the group consisting of azoxystrobin, dimoxystrobin, famoxadone, kresoxim-methyl, metominostrobin, picoxystrobin, pyraclostrobin, trifloxystrobin, and mixtures thereof.

20. The method according to claim 10, wherein the fungicide comprises fluquinconazole and simeconazole.

20 21. The method according to claim 10, wherein the fungicide comprises fluquinconazole and azoxystrobin.

22. The method according to claim 10, wherein the fungicide comprises simeconazole and azoxystrobin.

23. The method according to claim 8, wherein the fungicide comprises simeconazole and silthiofam.

25 24. The method according to claim 1, wherein the plant or its propagation material comprises seed and the seed is treated with an amount of the fungicide from about 0.1 gm/100 kg of seed to about 1,000 gm/100kg of seed.

30 25. The method according to claim 24, wherein the seed is treated with fungicide in an amount of from about 2 gm/100 kg of seed to about 200 gm/100 kg of seed.

26. The method according to claim 25, wherein the seed is treated with fungicide in an amount of from about 10 gm/100 kg of seed to about 150 gm/100 kg of seed.

5 27. The method according to claim 26, wherein the seed is treated with fungicide in an amount of from about 20 gm/100 kg of seed to about 100 gm/100 kg of seed.

10 28. The method according to claim 1, wherein the agronomic plant is selected from the group consisting of corn, cereals, barley, rye, rice, vegetables, clovers, legumes, beans, peas, alfalfa, sugar cane, sugar beets, tobacco, cotton, rapeseed (canola), sunflower, safflower, and sorghum.

29. The method according to claim 28, wherein the agronomic crop comprises corn.

15 29. The method according to claim 1, wherein the agronomic plant is a member of the class Magnoliopsida.

30. The method according to claim 29, wherein the agronomic plant is a member of the order Fabales.

31. The method according to claim 29, wherein the agronomic plant is a member of the family Fabaceae.

20 32. The method according to claim 29, wherein the agronomic plant is a member of the sub-family Papilionoideae or Faboideae.

25 33. The method according to claim 29, wherein the agronomic plant is selected from the group consisting of *Pisum spp.*, *Medicago spp.*, *Arachis spp.*, *Glycine spp.*, *Vicia spp.*, *Vigna spp.*, trefoil, clovers and *Phaseolus spp.*

34. The method according to claim 28, wherein the agronomic plant is a soybean plant.

30 35. The method according to claim 1, wherein the step of treating the plant or its propagation material comprises treating the seed with an effective amount of the fungicide.

36. The method according to claim 1, wherein the step of treating the plant or its propagation material comprises applying the fungicide to the foliage of the plant.

5 37. The method according to claim 36, wherein the agronomic plant is a member of the family Fabaceae.

38. The method according to claim 37, wherein the agronomic plant is a member of the sub-family Papilionoideae or Faboideae.

10 39. The method according to claim 38, wherein the agronomic plant is selected from the group consisting of *Pisum spp.*, *Medicago spp.*, *Arachis spp.*, *Glycine spp.*, *Vicia spp.*, *Vigna spp.*, trefoil, clovers and *Phaseolus spp.*

15 40. The method according to claim 35, wherein the seed is treated with an inoculant comprising *Azospirillum spp.*, or *Rhizobium spp.*, or *Bradyrhizobium spp.*, or a mixture of *Rhizobium spp.* and *Bradyrhizobium spp.*, or a mixture of either *Rhizobium spp.*, or *Bradyrhizobium spp.* with any other microorganisms.

41. The method according to claim 40, wherein the seed is treated with an inoculant comprising *Bradyrhizobium japonicum*.

20 42. The method according to claim 35, wherein the treatment of the seed of the plant comprises, in addition, treatment of the seed with a fungicide selected from the group consisting of fludioxonil, fluquinconazole, difenoconazole, captan, metalaxyl, carboxin and thiram.

25 43. The method according to claim 35, where the treatment of the seed comprises treatment with an inoculant comprising *Azospirillum spp.*, or *Rhizobium spp.*, or *Bradyrhizobium spp.*, or a mixture of *Rhizobium spp.* and *Bradyrhizobium spp.*, or a mixture of either *Rhizobium spp.*, or *Bradyrhizobium spp.* with any other microorganisms.

30 44. The method according to claim 1, wherein the plant propagation material comprises a seed and wherein the seed possesses a transgenic event providing the plant with resistance to a herbicide and the treatment comprises foliar application of said herbicide.

45. The method according to claim 44, wherein the herbicide is selected from the group consisting of glyphosate, glyfosinate, glufosinate, imidazilinone and STS system.

5 46. The method according to claim 36, wherein the seed possesses a transgenic event providing the plant with resistance to a herbicide selected from the group consisting of glyphosate, glyfosinate, imidazilinone and STS system and the treatment comprises foliar application of said herbicide.

10 47. The method according to claim 1, wherein the treatment comprises treating the seed of the plant with an inoculant selected from the group consisting of *Azospirillum spp.*, *Rhizobium spp.*, *Bradyrhizobium spp.*, a mixture of *Rhizobium spp.* and *Bradyrhizobium spp.*, and a mixture of either *Rhizobium spp.*, or *Bradyrhizobium spp.* with any other microorganisms, and further includes foliar treatment of the plant with

15 48. The method according to claim 47, wherein the seed possesses a transgenic event providing the plant with resistance to a herbicide selected from the group consisting of glyphosate, glyfosinate, glufosinate, imidazilinone and STS system and the treatment further comprises foliar application of said herbicide.

20 49. The method according to claim 36, wherein the seed possesses a transgenic event providing the plant with resistance to a herbicide and the step of applying the fungicide to the foliage of the plant comprises the application of the fungicide in combination with said herbicide.

25 50. The method according to claim 49, wherein the herbicide is glyphosate.

30 51. An agronomic plant or its propagation material for which *Gaeumannomyces graminis* is not a disease-causing organism, wherein the plant or its propagation material has been treated with a composition comprising an effective amount of an active agent which has activity against *Gaeumannomyces graminis*, and wherein the plant is not wheat

and the active agent is selected from the group consisting of a diazole fungicide, a triazole fungicide, and a strobilurin-type fungicide.

52. The plant or its propagation material of claim 51, wherein the *Gaeumannomyces graminis* is of the variety *tritici*.

5 53. A plant or its propagation material of the family Fabaceae which has been treated with a composition comprising an active agent which has activity against *Gaeumannomyces graminis* in an amount sufficient to increase the yield and/or the vigor of said plant, wherein the active agent is selected from the group consisting of a diazole fungicide, a triazole fungicide, and a strobilurin-type fungicide.

54. The plant or its propagation material according to claim 53, wherein the *Gaeumannomyces graminis* is of the variety *tritici*.

55. The plant or its propagation material according to claim 54, where the propagation material is a seed and wherein the plant is a soybean.

56. The seed according to claim 55, wherein the seed is contacted with an inoculant comprising *Rhizobium spp.*, or *Bradyrhizobium spp.*, or a mixture of *Rhizobium spp.* and *Bradyrhizobium spp.*, or a mixture of either *Rhizobium spp.*, or *Bradyrhizobium spp.* with any other microorganisms.

57. The seed according to claim 56, wherein the seed is contacted with a fungicide selected from the group consisting of fludioxonil, fluquinconazole, difenoconazole, captan, metalaxyl, carboxin and thiram.

58. The plant or its propagation material according to claim 53, wherein the plant or its propagation material has a transgenic event.

59. The plant or its propagation material according to claim 53, wherein the plant or its propagation material is the product of a QTL-based selective breeding program.

60. A seed that has been treated by the method of claim 1.

61. A formulation for the treatment of a seed, the formulation comprising a diazole fungicide, or a triazole fungicide, or a strobilurin type

fungicide, a dispersant, a phosphate buffer having the capability of providing buffering at a pH that is within a range of from about 5 to about 9, one or more crystal growth inhibitors, an antifoam agent, a surfactant, a colorant, a polymer sticker or binder, a thickener, glycerin, and water.

5           62.    The formulation according to claim 61, wherein the diazole, triazole, or strobilurin-type fungicide is present at a concentration of about 10%; the dispersant is present at a concentration of about 3%; the phosphate buffer is present in an amount of about 1.5%; the pH is buffered within a range of about 6.5 to about 7.5, the one or more crystal growth  
10           inhibitors are present in an amount of about 2.4%; the antifoam agent is present in an amount of about 0.1%; the surfactant is present in an amount of about 0.5%; the colorant is present in an amount of about 8%; the polymer sticker or binder is present in an amount of about 7%; the thickener is present in an amount of about 0.1%; the glycerin is present in  
15           an amount of about 5%; and with the remainder being water, where all concentrations are given on a weight basis.

          63.    The formulation according claim 61, wherein the diazole fungicide, triazole fungicide or strobilurin type fungicide comprises simeconazole.